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ASK BETTER SCIENTIFIC RESEARCH WORK
ON USSR MOTOR VEHICLES, TRACTORS

In the postwar period, scientific research institutes of the motor vehicle and tractor industry, in cooperation with motor vehicle and tractor plants, have developed and introduced into production a number of newly designed motor vehicles and tractors, technological processes, and materials, including the KD-35 tractor /NAMI, (Scientific Research Motor Vehicle and Motor Institute), NATI (State Union Scientific Research Tractor Institute), and Lipetsk Tractor Plant; the ZIS-156 and GAZ-51B gas-cylinder trucks operating on compressed gas /NAMI, Moscow Motor Vehicle Plant imeni Stalin, and Gor'kiy Motor Vehicle Plant; the Ural ZIS-352 gas-generator truck /NAMI, Miass Ural Motor Vehicle Plant imeni Stalin; the GB-58 and GT-58 gas-generator tractors /NATI, Stalin-grad Tractor Plant; hydraulic controls for mounted farm implements for the Universal-2 and KhtZ-7 tractors /NATI, Moscow Plant imeni Budennyi.

Also, the new MKTsS aluminum alloy /NAMI, Gor'kiy Motor Vehicle Plant; a process for casting YaAZ-204 engine pistons and piston rings out of iron containing globular graphite /NAMI, Yaroslavl' Motor Vehicle Plant; P-Orgavtoprom oilless binder, hot rolling of bearing rings /ENIIPP (Experimental Scientific Research Institute of the Bearing Industry), Moscow First State Bearing Plant; transverse rolling of balls /ENIIPP, TsNIITMash (Central Scientific Research Institute of Technology and Machine Building), NII T.V.Ch. (Scientific Research Institute of High Frequency Currents); and a new type of forging press /NII T.V.Ch., Gipravtotraktoroprom (State Institute for the Planning of Motor Vehicle and Tractor Industry Enterprises), and the Moscow Small Displacement Motor Vehicle Plant.

Scientific research institutes publish guide materials for designers and technologists, including instructions, handbooks, norms, and bulletins for exchanging technical information.

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A considerable number of scientific research developments are undergoing widespread production tests. These developments include steel tractor radiators to replace brass radiators, 20KhGB steel as a replacement for nickel-molybdenum steel, a chrome-silicon alloy for cylinder sleeves to replace a nickel-copper alloy, gas-cylinder vehicles that operate on liquefied gas, gas-generator vehicles that operate on solid fuel, and gas-generator units that operate on green wood, for mobile electric power generators used in timber-cutting regions.

For a number of years, the motor vehicle and motor divisions of NAMI, the leading scientific research institute of the motor vehicle and tractor industry, have not been taking an active part in solving many difficult industrial problems. Postwar trucks and passenger cars (ZIS-150, GAZ-51, Pobeda, ZIM, and others) were developed exclusively by the design divisions of motor vehicle plants. Only in the past 2 or 3 years has NAMI begun work to improve the designs of these motor vehicles and conducted research on strengthening springs, unifying brake systems, strengthening the frames of trucks, and lightening vehicle bodies.

Orgavtoprom, NII T.V.Ch., and NII Avtopriborov (Scientific Research Motor Vehicle Electrical Equipment, Carburetor, and Instruments Institute) have close ties with industry. The work of these institutes is utilized at plants more often than the work of NAMI.

A serious shortcoming of most scientific research institutes of the motor vehicle and tractor industry is that they carry on work for excessively long periods of time without visible results. The number of projects carried over from one year to the next by NAMI and NATI increased 2.5 times between 1948 and 1952. In NAMI's 1952 plan, 25 percent of the projects had been carried over for three consecutive years.

This situation is attributable to the multiplicity of projects and the dispersal of personnel in the institutes. In NAMI, for example, there are laboratories with a total of two or three scientific and engineering-technical workers. Small laboratories such as these cannot carry out urgent tasks such as developing an automatic hydromechanical transmission, a more economical gasoline engine, engine attachments for high-altitude operation, and methods of strengthening vehicle suspensions with plastic coatings.

Research projects are carried out so slowly that the results are sometimes out of date before the project is completed. For example, the Special Motor Vehicle Laboratory under NAMI has developed an idling economizer which does not meet the technical demands for new carburetors.

Scientific research resources should be concentrated on the most important research projects, and these projects should be completed rapidly.

Scientific research work is also carried out by plant laboratories. To find a substitute for molybdenum steel used in producing transmission gears and in making dies, the Moscow Motor Vehicle Plant imeni Stalin carried out extensive research, which resulted in the development of new types of steel alloyed with titanium (15KhGT, 5KhGT, etc.). A number of plant workers received Stalin Prizes in 1951 for developing and utilizing these types of steel. The plant is carrying on extensive research work on high-speed metal cutting, new processes using high-frequency currents, and new methods for saving nonferrous metals. The results of this work are utilized at other enterprises of the motor vehicle and tractor industry.

The capacity of plant laboratories, which are well equipped and have highly skilled personnel, should be utilized more fully.

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Scientific research institutes and plants of the motor vehicle and tractor industry should expand work on reducing the metal consumption and increasing fuel economy of motor vehicles and tractors, improving the quality of machines, and developing new types of motor vehicle and tractor gas-generator units which will utilize local fuels. These institutes and plants should develop long-range plans for types of motor vehicles and tractors and create a unified series of engines for them, develop and introduce into industry new technological processes, and expand work on automatizing and mechanizing production processes and control operations.

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